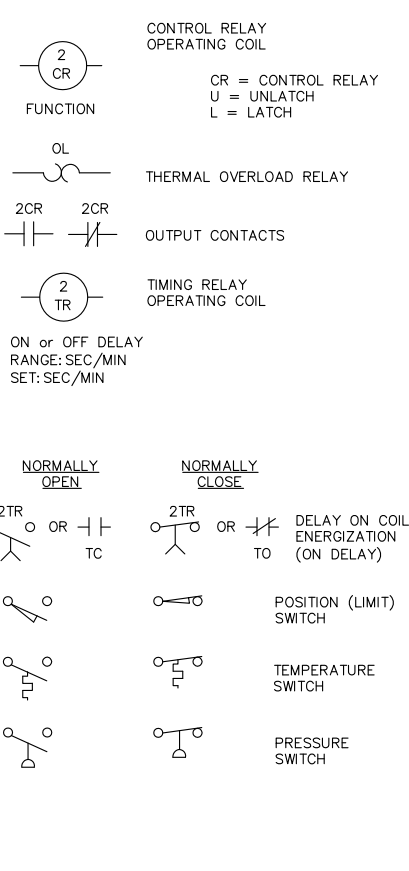
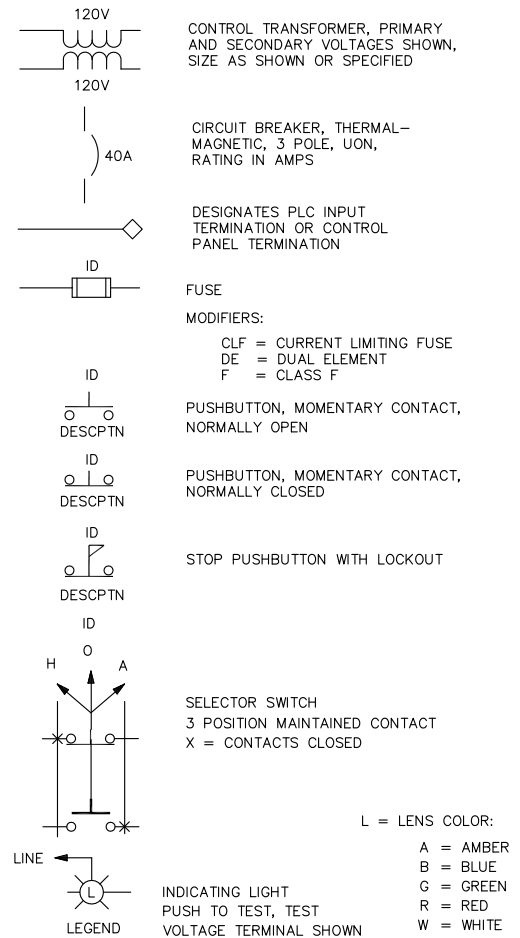
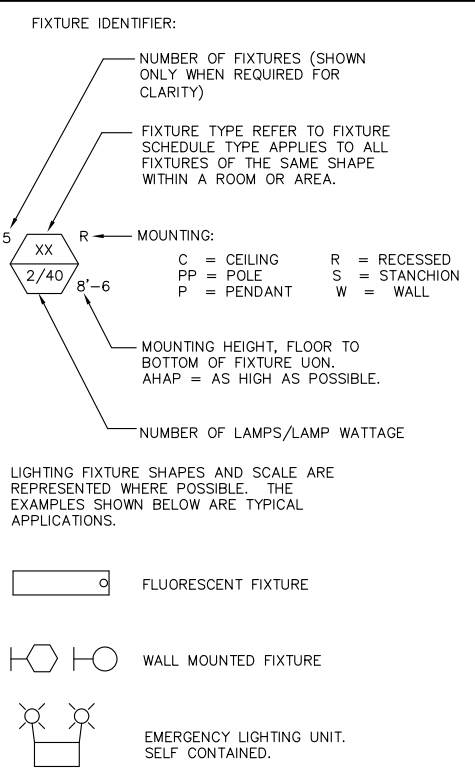


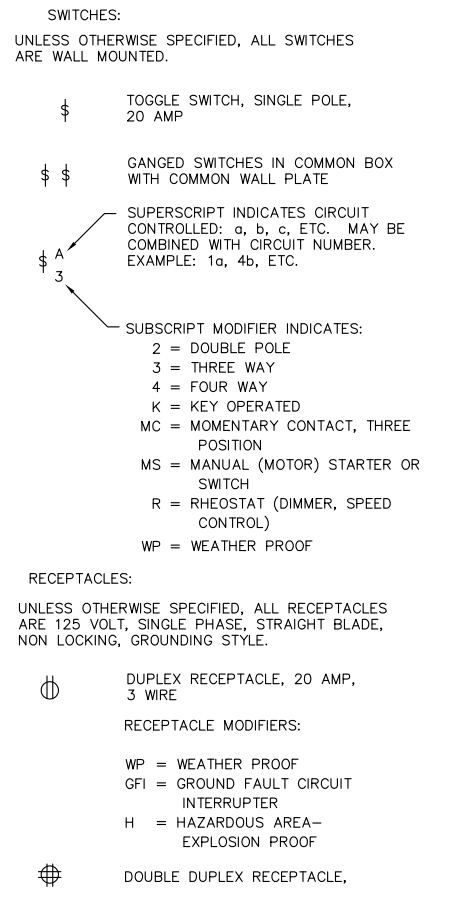
CONTROL DIAGRAM SYMBOLS



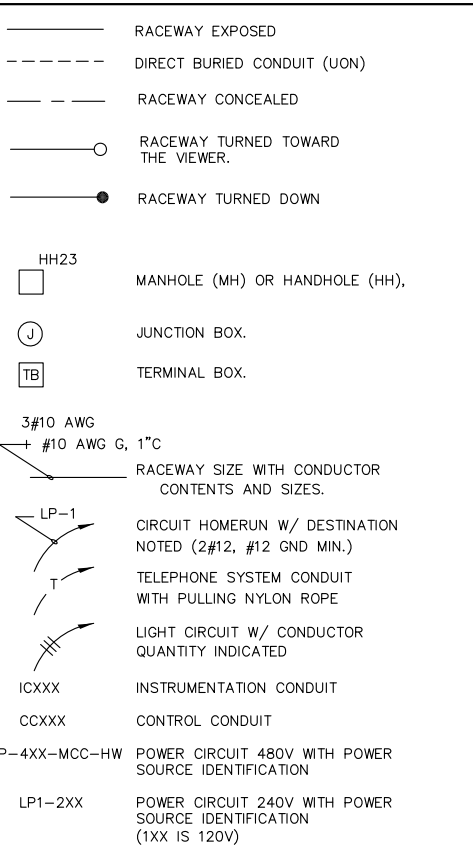
LIGHTING



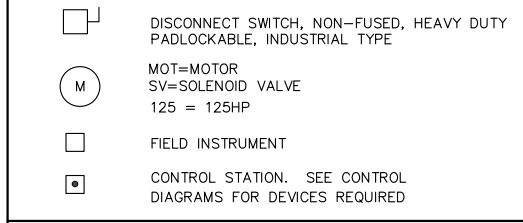
WIRING DEVICES



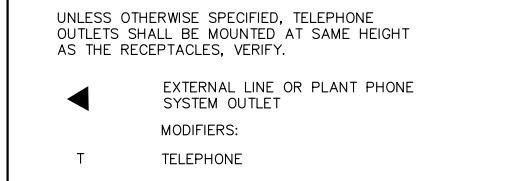
CIRCUITS AND RACEWAYS



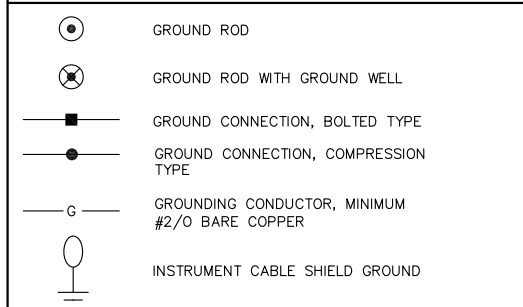
MOTORS AND EQUIPMENT



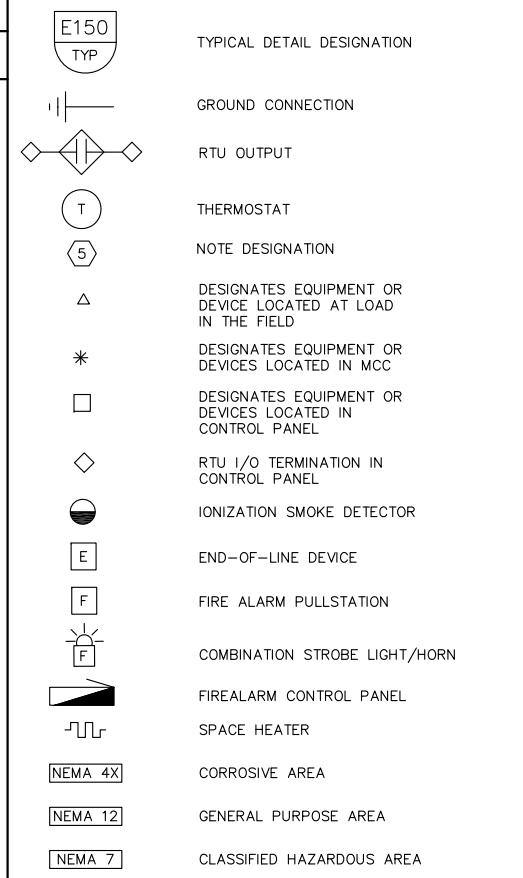
TELEPHONE & COMMUNICATION SYSTEMS



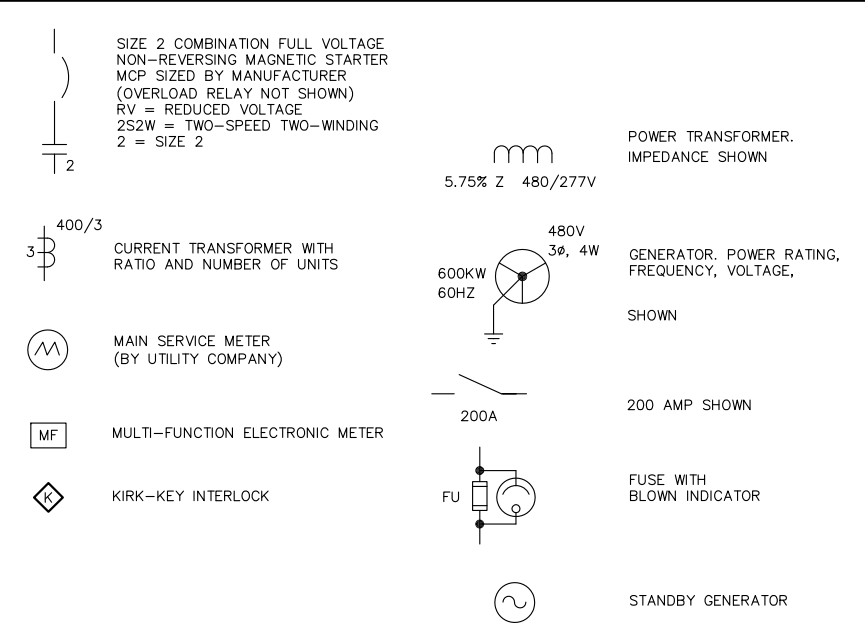
GROUNDING



MISCELLANEOUS



ONE-LINE DIAGRAM SYMBOLS

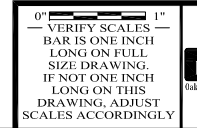


GENERAL NOTES

- THIS DRAWING IS GENERAL IN NATURE. SOME SYMBOLS SHOWN HEREON MAY NOT BE USED ON THE CONTRACT DRAWINGS.
- IDENTIFICATIONS (ID), SIZES, RATINGS, LOCATIONS AND SIMILAR INFORMATION SHOWN ASSOCIATED WITH SYMBOLS ARE OPTIONAL; EXAMPLES OF SUCH INFORMATION ARE SHOWN WITH SOME SYMBOLS FOR CLARITY.
- THE ELECTRICAL DRAWINGS USE THE ONE-LINE DIAGRAMS AND PANEL SCHEDULES IN CONJUNCTION WITH SHOWING THE LOCATION OF THE ELECTRICAL/INSTRUMENTATION SOURCES AND LOADS/DEVICES SHOWN ON THE PLAN DRAWINGS TO DEPICT THE WORK. THE CONTRACTOR SHALL USE THESE DOCUMENTS TO DETERMINE AND PROVIDE THE NECESSARY RACEWAY AND WIRING SYSTEM FOR EACH CIRCUIT. ALL INDOOR RACEWAY SHALL BE RUN EXPOSED, AND ROUTED BY THE CONTRACTOR, UNLESS OTHERWISE NOTED. THE TYPE OF RACEWAY AND WIRE USED SHALL BE AS SPECIFIED IN THE SPECIFICATIONS UNLESS OTHERWISE NOTED.
- THE LOCATION OF THE CONTROL STATIONS SHOWN ON THE PLAN DRAWINGS ARE DIAGRAMMATIC AND THE ACTUAL LOCATION SHALL BE COORDINATED IN THE FIELD WITH THE CONSTRUCTION MANAGER.
- THE EXACT LOCATION OF THE MOTORS AND ACCESSORIES ARE NOT SHOWN. THE CONTRACTOR SHALL COORDINATE THE STRUCTURAL AND MECHANICAL DRAWINGS FOR CONDUIT STUBOUT AND TERMINATION LOCATIONS.
- ALL EQUIPMENT SHALL BE LABELED WITH NAMEPLATES. DESCRIPTION OF EQUIPMENT SHALL BE IN ACCORDANCE WITH THE ONE-LINE DIAGRAM DESCRIPTION. A LIST OF THE NAMEPLATES SHALL BE SUBMITTED TO THE CONSTRUCTION MANAGER PRIOR TO ENGRAVING.
- UNLESS OTHERWISE NOTED, ALL CONVENIENCE OUTLETS SHALL BE MOUNTED AT 48-INCHES ABOVE FINISHED FLOOR. ALL LIGHT SWITCHES SHALL BE MOUNTED AT 54-INCHES ABOVE FINISHED FLOOR.
- EACH CONVENIENCE OUTLET AND LIGHTING CIRCUIT SHALL BE PROVIDED WITH A #12AWG GREEN GROUNDING CONDUCTOR
- FOR SPARE CONDUCTORS, AT EACH END, TAPE & COIL UP AND PROVIDE ENGRAVED TAG IDENTIFYING "FROM AND TO" DESTINATION.
- ALL EXTERIOR CONDUITS SHALL BE PVC COATED RIGID GALVANIZED STEEL. ALL OUTDOOR ENCLOSURES SHALL BE NEMA 4X.
- CONDUIT ENTERING OR LEAVING CLASSIFIED HAZARDOUS LOCATION SHALL BE PROVIDED WITH "EYS" SEALS PER NEC.
- ELECTRICAL DRAWINGS DO NOT SHOW ALL REQUIRED DEMOLITION. SEE MECHANICAL DRAWINGS FOR ADDITIONAL DEMOLITION.

PRELIMINARY

FILENAME: 286-ED1 8-31-11 03:10pm Eloy J. XREFS1 X-SMSD1-TBLK KCC--



ENGINEERS, INC.
National, San Francisco, Orange County, CA

RMC
Water and Environment

REV	DATE	BY	APVD	DESCRIPTION

DESIGNED	TP	SUBMITTED: RMC PROJ ENGR
DRAWN	EA	
CHECKED	DN	
APPROVED:		RMC ENGR

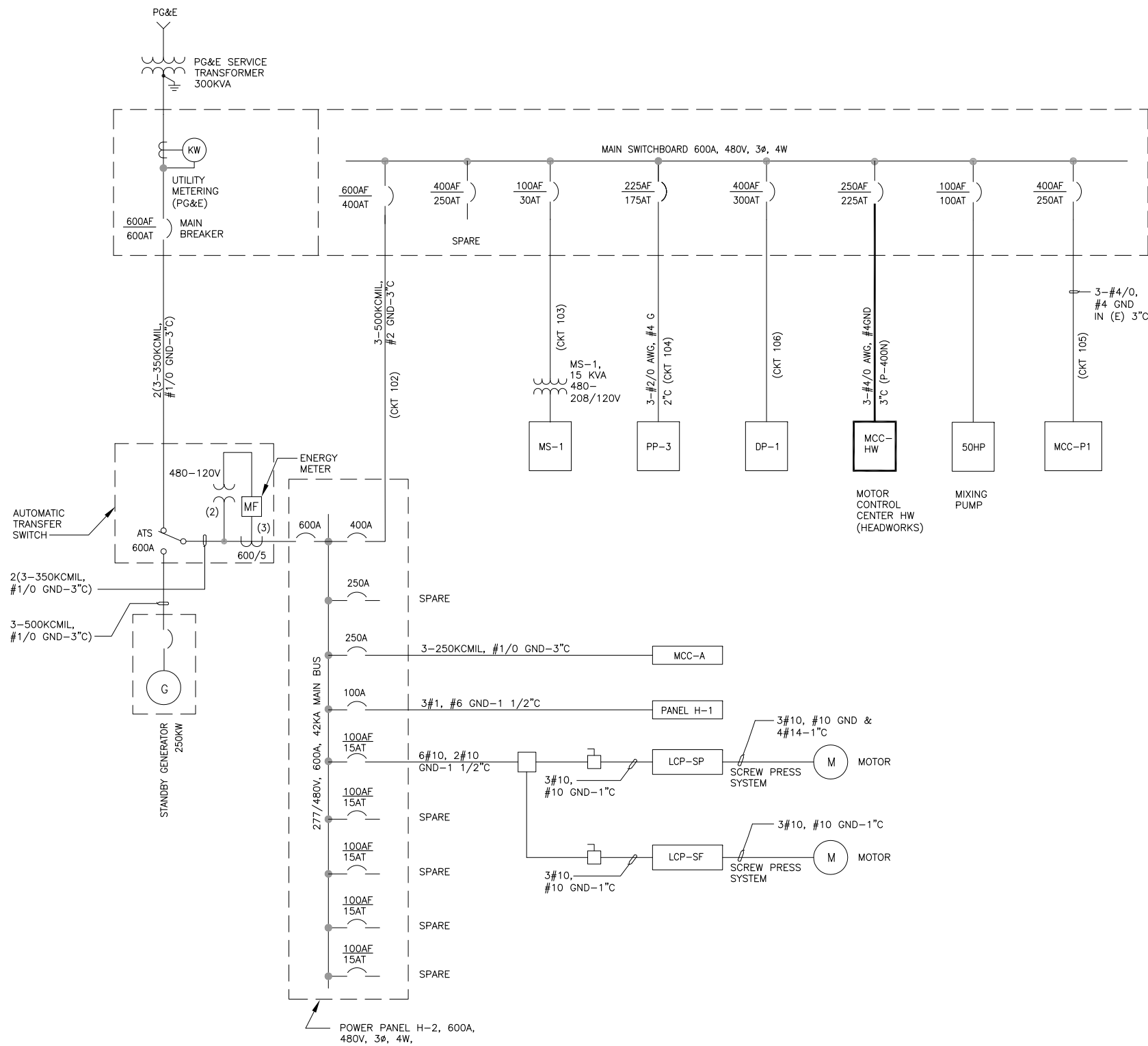
SAUSALITO - MARIN CITY SANITARY DISTRICT

LEGEND AND SYMBOLS

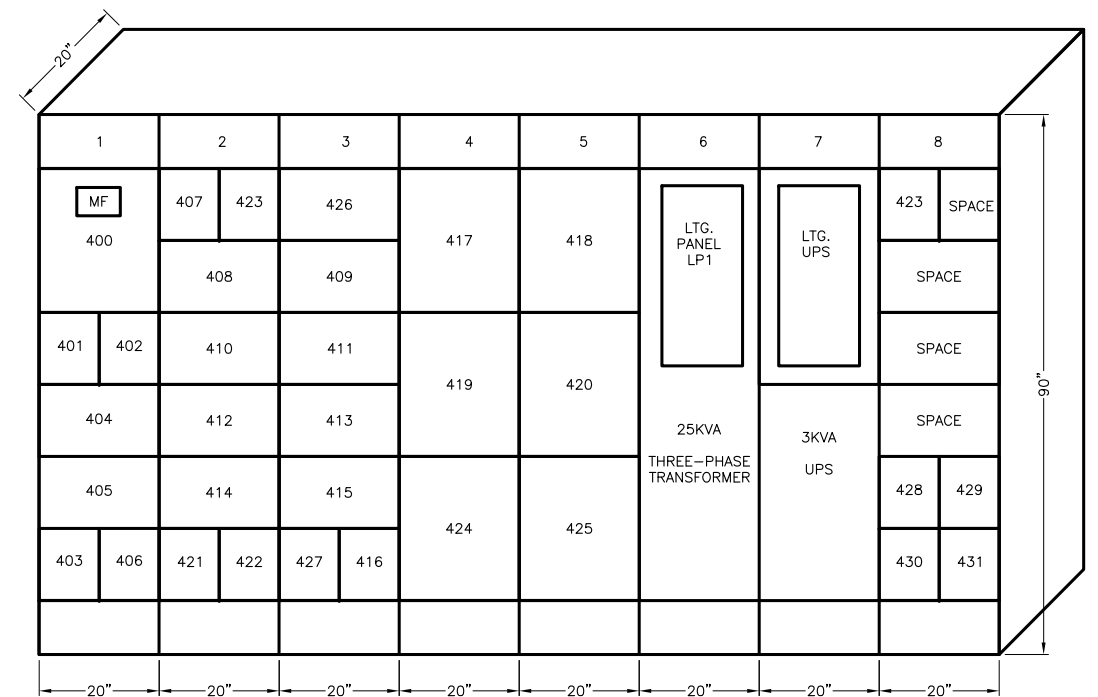
DWG NO	E-1
SHEET NO	X OF
PROJ NO	055-003
DATE	AUGUST 2011

SHEET NOTES:

1 xx



MAIN SINGLE-LINE DIAGRAM A
SCALE: NTS



MCC-HW ELEVATION B
SCALE: NTS

PRELIMINARY

FILENAME: 286-E02 8-31-11 03:08pm Eloy XREFS: X-SMCSO-TBLK <--->

0" = 1"
VERIFY SCALES
BAR IS ONE INCH
LONG ON FULL
SIZE DRAWING.
IF NOT ONE INCH
LONG ON THIS
DRAWING, ADJUST
SCALES ACCORDINGLY

ENGINEERS, INC.
Oakland, San Francisco, Orange County, CA

RMC
Water and Environment

REV	DATE	BY	APVD	DESCRIPTION

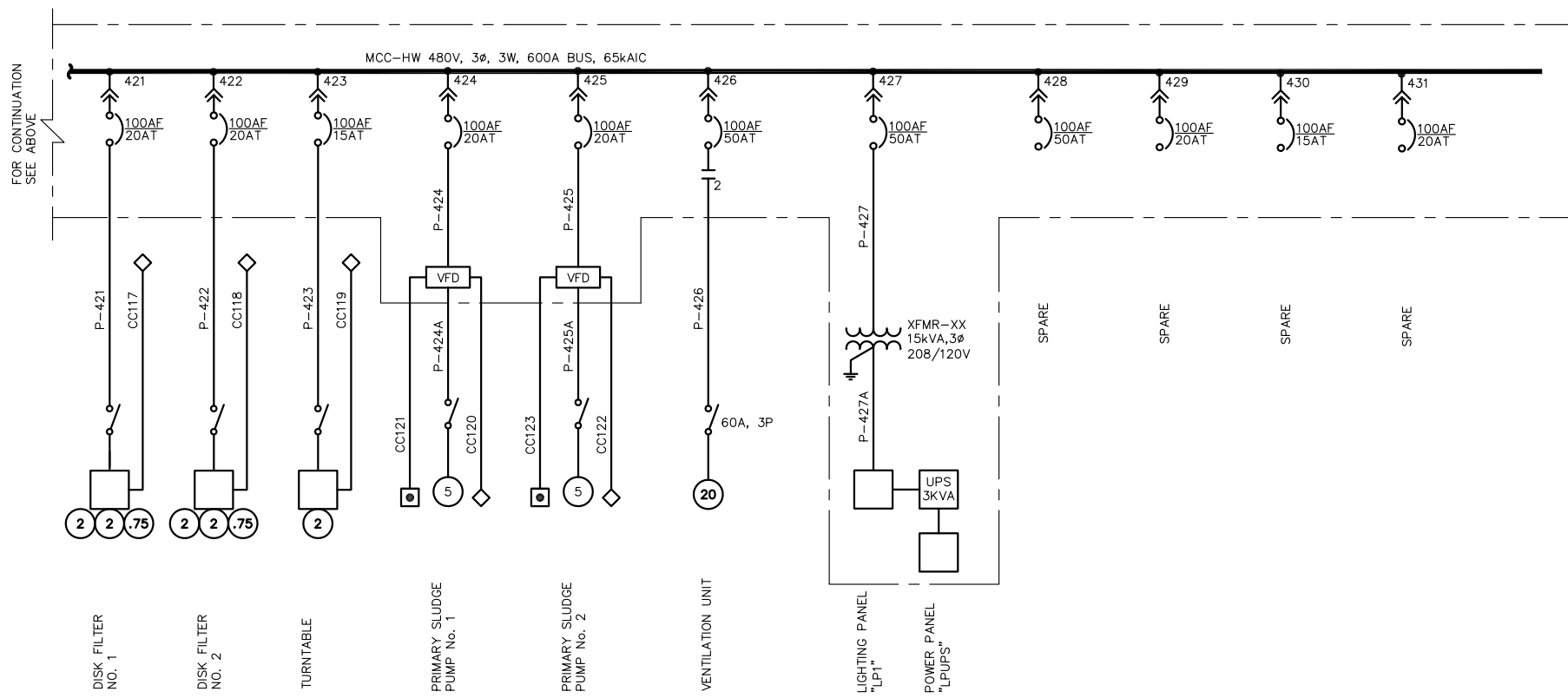
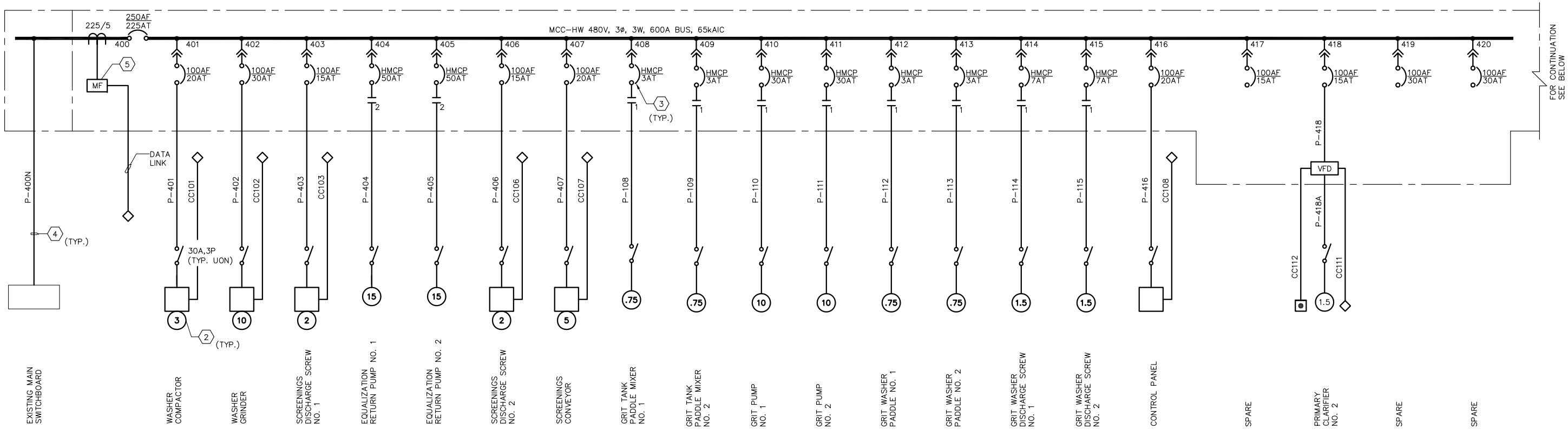
DESIGNED: TN
DRAWN: EA
CHECKED: DN

SUBMITTED:
RMC PROJ ENGR
APPROVED:
RMC ENGR

SAUSALITO - MARIN CITY SANITARY DISTRICT
PLANT SINGLE - LINE DIAGRAM AND
MCC HW ELEVATION

DWG NO: E-2
SHEET NO: X OF
PROJ NO: 055-003
DATE: AUGUST 2011

FILENAME: 286-EO3 8-31-11 03:10pm Eloy X:\REFS\1 X-SMSD-TBLK KCC--



LOADS TABULATIONS			
	HP OR KVA	CURRENT @480V	NOTES
TOTAL LOADS	136	163.59	
DEMAND LOADS	87	104.69	
LOAD FACTOR = $\frac{\text{DEMAND LOADS}}{\text{TOTAL LOADS}} = \frac{\text{KVA}}{\text{KVA}} = 64\%$			
125% OF LARGEST LOAD = $20 \times 1.25 = 25\text{KVA}$			
MCC SIZING: $136\text{KVA} + 25\text{KVA} = 161\text{KVA}$			

- SHEET NOTES:**
- 1 THE MCC SHALL BE LOCATED IN THE GENERAL PURPOSE, NON-CLASSIFIED LOCATION.
 - 2 ALL MOTORIZED EQUIPMENT SHOWN ARE LOCATED IN CLASSIFIED HAZARDOUS LOCATIONS AND SHALL BE EXPLOSION PROOF. REFER TO SPECIFIC FLOOR PLANS FOR SPECIFIC CLASSIFICATION OF THE HAZARDOUS LOCATION.
 - 3 ALL BREAKERS SHOWN ARE THREE-POLE U.O.N.
 - 4 REFER TO CABLE AND CONDUIT SCHEDULES SHOWN ON DRAWING E-XX FOR CONDUIT AND CABLE DETAILS.
 - 5 PROVIDE REQUIRED PT'S AND CT'S FOR COMPLETE FUNCTIONS OF THE MULTI-FUNCTION ELECTRONIC METER.
 - 6 ALL POWER CIRCUITS SHALL HAVE SUBFIX "MCC-HW". SEE CABLE AND CONDUIT SCHEDULE ON DRAWING E-XX.

SINGLE-LINE DIAGRAM - MOTOR CONTROL CENTER MCC-HW (A) (1) (6)
SCALE: NTS

PRELIMINARY

0" = 1"
VERIFY SCALES - BAR IS ONE INCH LONG ON FULL SIZE DRAWING. IF NOT ONE INCH LONG ON THIS DRAWING, ADJUST SCALES ACCORDINGLY



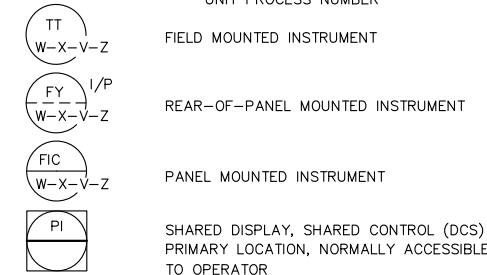
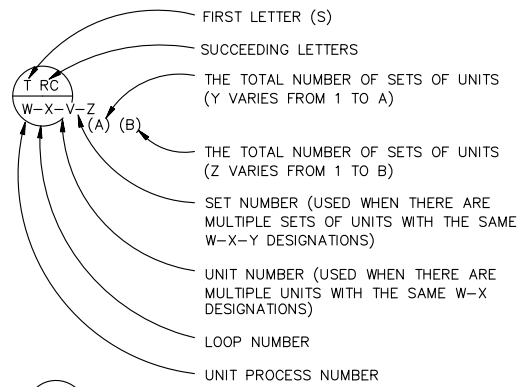
REV	DATE	BY	APVD	DESCRIPTION

DESIGNED	TN	SUBMITTED: RMC PROJ ENGR
DRAWN	EA	
CHECKED	DN	
APPROVED:		RMC ENGR

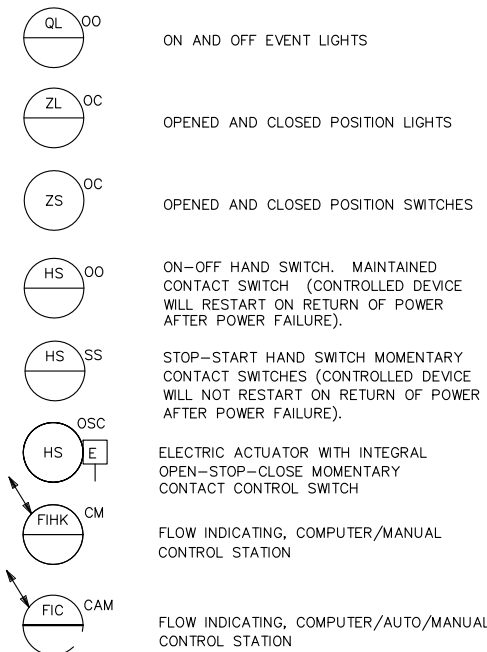
SAUSALITO - MARIN CITY SANITARY DISTRICT		DWG NO	E-3
SINGLE LINE DIAGRAM MCC-HW		SHEET NO	X OF
		PROJ NO	055-003
		DATE	AUGUST 2011

INSTRUMENT IDENTIFICATION

EXAMPLE SYMBOLS



SPECIAL CASES



INTERNATIONAL SOCIETY FOR AUTOMATION (ISA) TABLE

LETTER	FIRST LETTER (S)		SUCCEEDING LETTERS		
	PROCESS OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS (+)		ALARM		
B	BURNER FLAME		USERS CHOICE (+)	USERS CHOICE (+)	USERS CHOICE (+)
C	CONDUCTIVITY			CONTROL	
D	DENSITY (S.G)	DIFFERENTIAL			
E	VOLTAGE		PRIMARY ELEMENT		
F	FLOW RATE	RATIO			
G	GAUGE		GLASS	GATE	
H	HAND (MANUAL)				HIGH
I	CURRENT		INDICATE		
J	POWER	SCAN			
K	TIME OR SCHEDULE			CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	MOTION				MIDDLE
N	USERS CHOICE (+)		USERS CHOICE (+)	USERS CHOICE (+)	USERS CHOICE (+)
O	USERS CHOICE (+)		ORIFICE		
P	PRESSURE (OR VACUUM)		POINT (TEST CONNECTION)		
Q	QUANTITY OR EVENT(+)	INTEGRATE	INTEGRATE		
R			RECORD OR PRINT		
S	SPEED OR FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE (+)		MULTIFUNCTION (+)	MULTIFUNCTION (+)	MULTIFUNCTION (+)
V	VISCOSITY			VALVE OR DAMPER	
W	WEIGHT OR FORCE		WELL		
X	UNCLASSIFIED (+)		UNCLASSIFIED (+)	UNCLASSIFIED (+)	UNCLASSIFIED (+)
Y	USERS CHOICE (+)			RELAY OR COMPUTE (+)	
Z	POSITION			DRIVE, ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT	

(+) WHEN USED, EXPLANATION IS SHOWN ADJACENT TO INSTRUMENT SYMBOL. SEE ABBREVIATIONS AND LETTER SYMBOLS.

TRANSDUCERS

A	ANALOG	I	CURRENT
D	DIGITAL	P	PNEUMATIC
E	VOLTAGE	PF	PULSE FREQUENCY
F	FREQUENCY	PD	PULSE DURATION
H	HYDRAULIC	R	RESISTANCE

EXAMPLE:

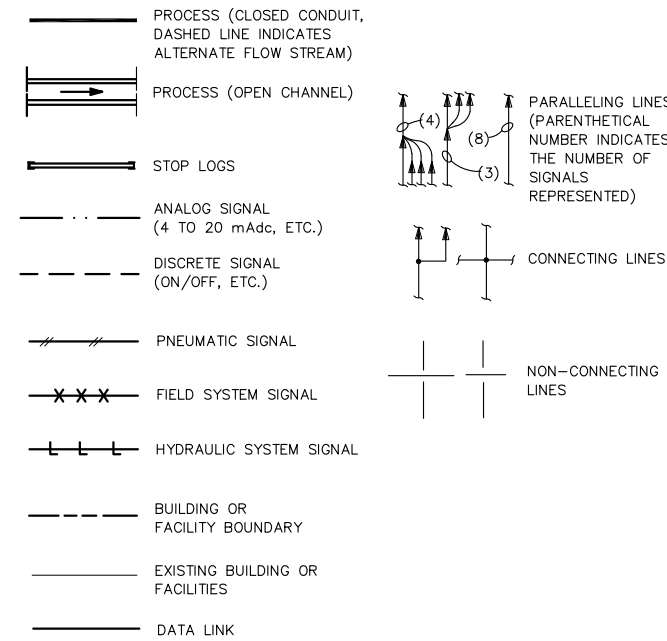


SELF CONTAINED VALVE & EQUIPMENT TAG NUMBERS

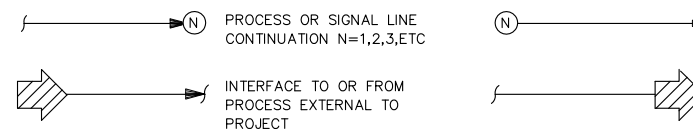
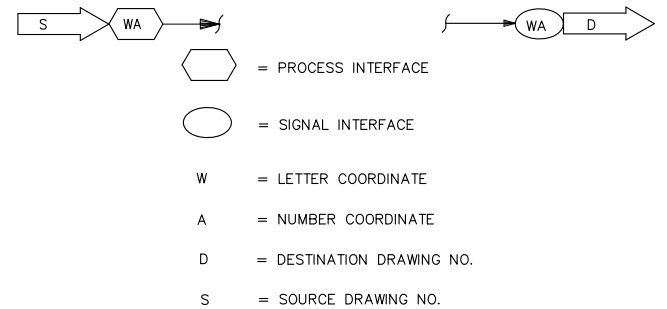
- PA: PLANT ABBREVIATION
W: UNIT PROCESS NUMBER
D: ARV = AIR RELEASE VALVE
AVRV = AIR AND VACUUM RELEASE VALVE
E = EJECTOR
FCV = FLOW CONTROL VALVE
G = GATE
LCV = LEVEL CONTROL VALVE
M = MECHANICAL EQUIPMENT
P = PUMP
PCV = PRESSURE CONTROL VALVE
VRV = VACUUM RELIEF VALVE
PSV = PRESSURE RELIEF VALVE
T = TANK
TCV = TEMPERATURE CONTROL VALVE
AHU = AIR HANDLING UNIT
X: LOOP NUMBER
Y: UNIT NUMBER



LINE LEGEND



INTERFACE SYMBOLS



GENERAL NOTES

- P & ID'S ARE FOR INFORMATION ON CONTROL CONCEPTS AND INSTRUMENTATION ONLY. REFER TO PLANS AND SPECIFICATIONS FOR DETAILS: PIPING: VALVING: PACKAGED EQUIPMENT CONTROLS AND MISCELLANEOUS ITEMS.
- THIS IS A STANDARD LEGEND. THEREFORE, NOT ALL OF THE SYMBOLS ARE USED IN THIS PROJECT.

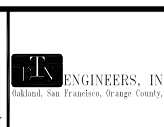
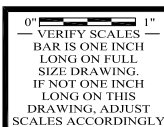
ABBREVIATIONS & LETTER SYMBOLS

AI	ANALOG INPUT	FR	FORWARD-REVERSE
AM	AUTO-MANUAL	FS	FAST - SLOW
AO	ANALOG OUTPUT	GBT	GRAVITY BELT THICKENER
CAM	COMPUTER-AUTO-MANUAL	H ₂ S	HYDROGEN SULFIDE
CM	COMPUTER-MANUAL	HOA	HAND-OFF-AUTO
CP-X	CONTROL PANEL NO. X	HOR	HAND-OFF-REMOTE
CG	COMBUSTIBLE GAS	LA	LOCAL-AUTO
CO	CARBON MONOXIDE	LP/DCS	LOCAL PANEL-DISTRIBUTED CONTROL SYSTEM
CTEL	CONNECT TO EXISTING LINE	LOC	LOCAL (AT FIELD DEVICE)
CP/DCS	CONTROL PANEL/DCS	LOS	LOCKOUT STOP
DSRSD	DUBLIN SAN RAMON SERVICES DISTRICT	LP	LOCAL PANEL
DCS	DISTRIBUTED CONTROL SYSTEM	L/S	LEAD-STANDBY
DCU	DISTRIBUTED CONTROL UNIT	LR	LOCAL-REMOTE
DI	DISCRETE INPUT	MA	MANUAL-AUTO
DO	DISCRETE OUTPUT	MCC-X	MOTOR CONTROL CENTER NO. X
(E)	EXISTING	MW	MOTOR WINDINGS
ES	EMERGENCY STOP	NS	NORTH-SOUTH
FLP	FAIL IN LAST POSITION	O ₂	OXYGEN
FBM	FIELD BUS MODULE	OC	OPEN-CLOSE (D)
FM	FORCE MAIN	OCA	OPEN-CLOSE-AUTO
FOR	FORWARD-OFF-REVERSE	OCR	OPEN-CLOSE-REMOTE
FP-W-X	FIELD PANEL NO. WX WHERE W = UNIT PROCESS NUMBER X = PANEL NUMBER	OCU	ODOR CONTROL UNIT
		OO	ON-OFF - RTU REMOTE TERMINAL UNIT
		OOA	ON-OFF-AUTO
		OOR	ON-OFF-REMOTE
		ORP	OXIDATION REDUCTION POTENTIAL
		OSC	OPEN-STOP-CLOSE
		REV	REVERSE
		SBD	SODIUM BISULFITE DRAIN
		SHD	SODIUM HYPOCHLORITE DRAIN
		SLOS	START-LOCKOUT-STOP
		S/D	SEDIMENTATION-DEWATERING
		S/D/C	SEDIMENTATION-DEWATERING-CLOSED
		SS	START-STOP
		SSC	SUPERVISORY SET POINT CONTROL
		VFD	VARIABLE FREQUENCY DRIVE
		VHC	VOLATILE HYDROCARBON
		*	PROVIDED AS PACKAGED EQUIPMENT

RTU TERMINATIONS

- △ DISCRETE INPUT
- ▽ DISCRETE OUTPUT
- ▲ ANALOG INPUT
- ▼ ANALOG OUTPUT

PRELIMINARY



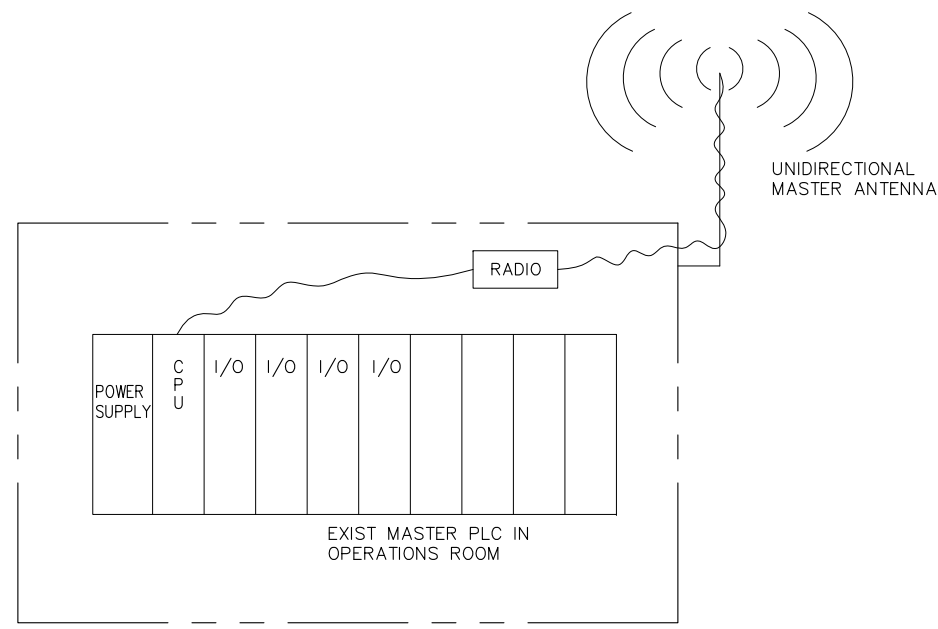
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DESIGNED	TN
DRAWN	EA
CHECKED	DN

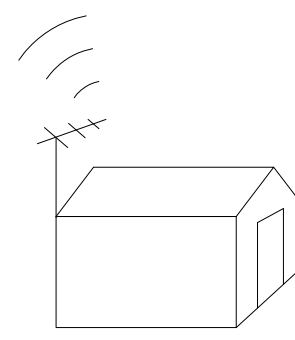
SUBMITTED:	RMC PROJ ENGR
APPROVED:	RMC ENGR

SAUSALITO - MARIN CITY SANITARY DISTRICT	
INSTRUMENTATION LEGEND	

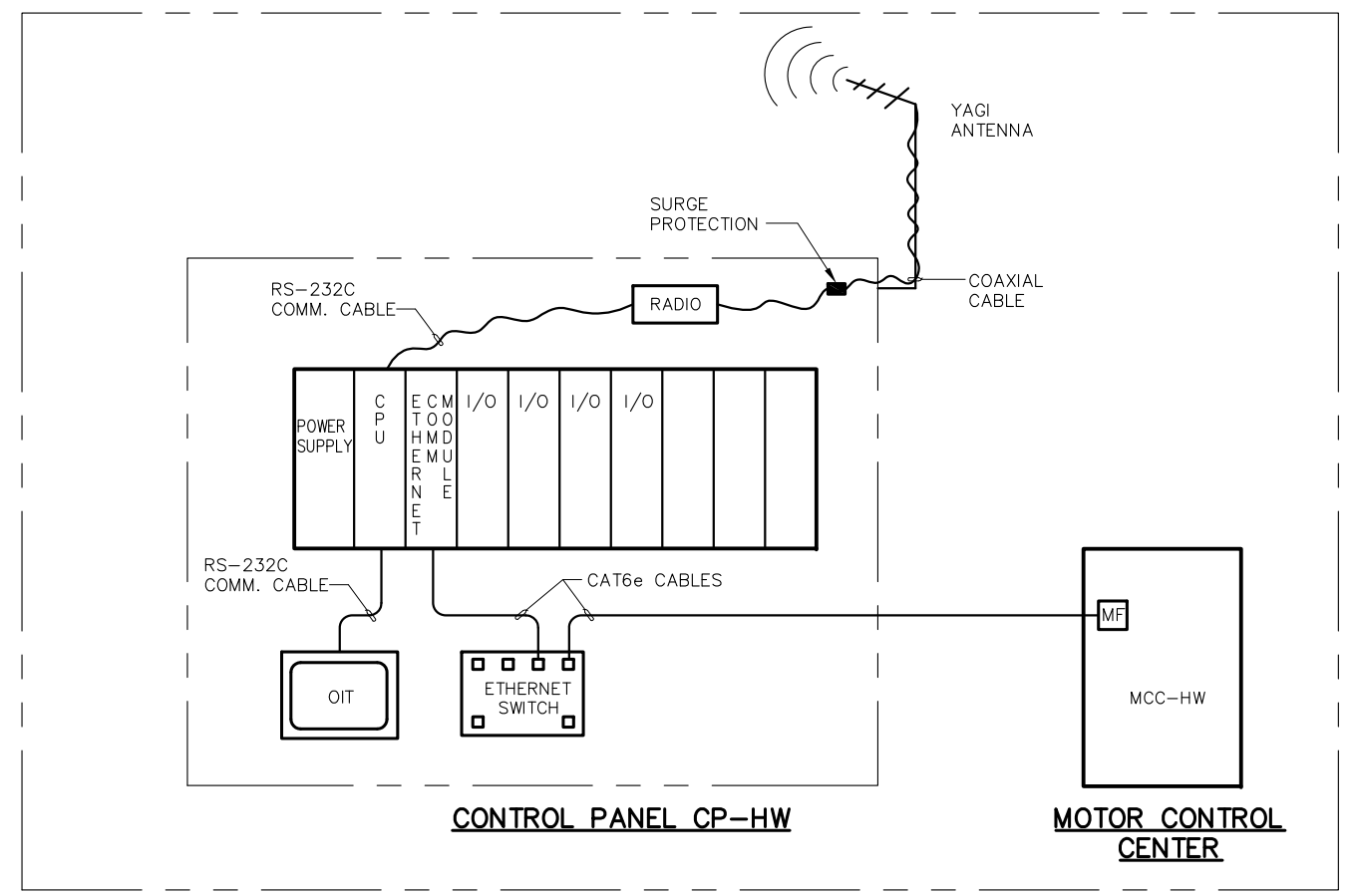
DWG NO	I-1
SHEET NO	X OF
PROJ NO	055-003
DATE	AUGUST 2011



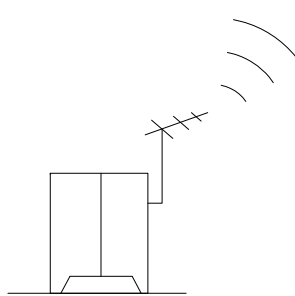
EXISTING CONTROL BUILDING



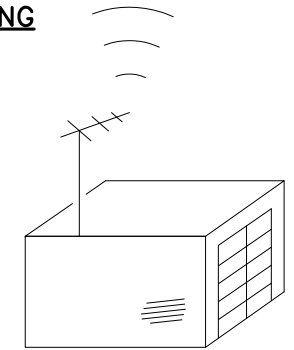
REMOTE STATION (TYPICAL)



HEADWORKS



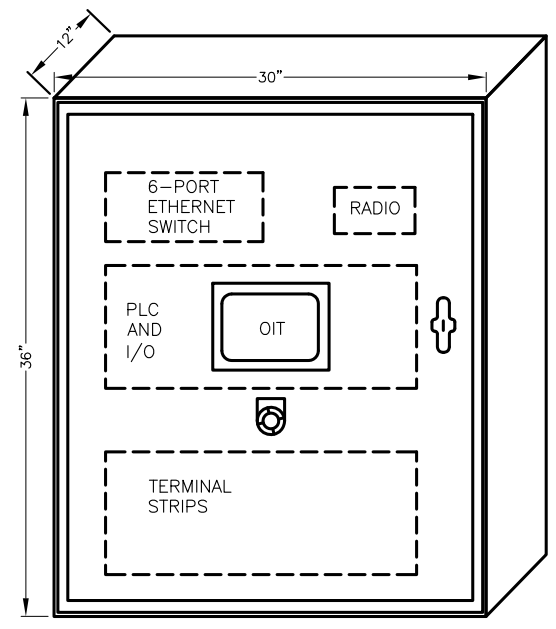
EXISTING SLUDGE CONTROL PANEL



EXISTING BUILDING (TYPICAL)

PARTIAL SCADA SYSTEM BLOCK DIAGRAM (A)

SCALE: NTS



CONTROL PANEL CP-HW (B)

SCALE: NTS

PRELIMINARY

FILENAME: 286-102-8-31-11-03:11pm Eloy XREFS: X=SMCSD-TBLK K<<--

0" 1"
 VERIFY SCALES
 BAR IS ONE INCH
 LONG ON FULL
 SIZE DRAWING.
 IF NOT ONE INCH
 LONG ON THIS
 DRAWING, ADJUST
 SCALES ACCORDINGLY

REV	DATE	BY	APVD	DESCRIPTION

DESIGNED	TN	SUBMITTED: RMC PROJ ENGR
DRAWN	EA	
CHECKED	DN	
APPROVED:		RMC ENGR

SAUSALITO - MARIN CITY SANITARY DISTRICT	
SCADA SYSTEM DIAGRAM	

DWG NO	I-2
SHEET NO	X OF
PROJ NO	055-003
DATE	AUGUST 2011